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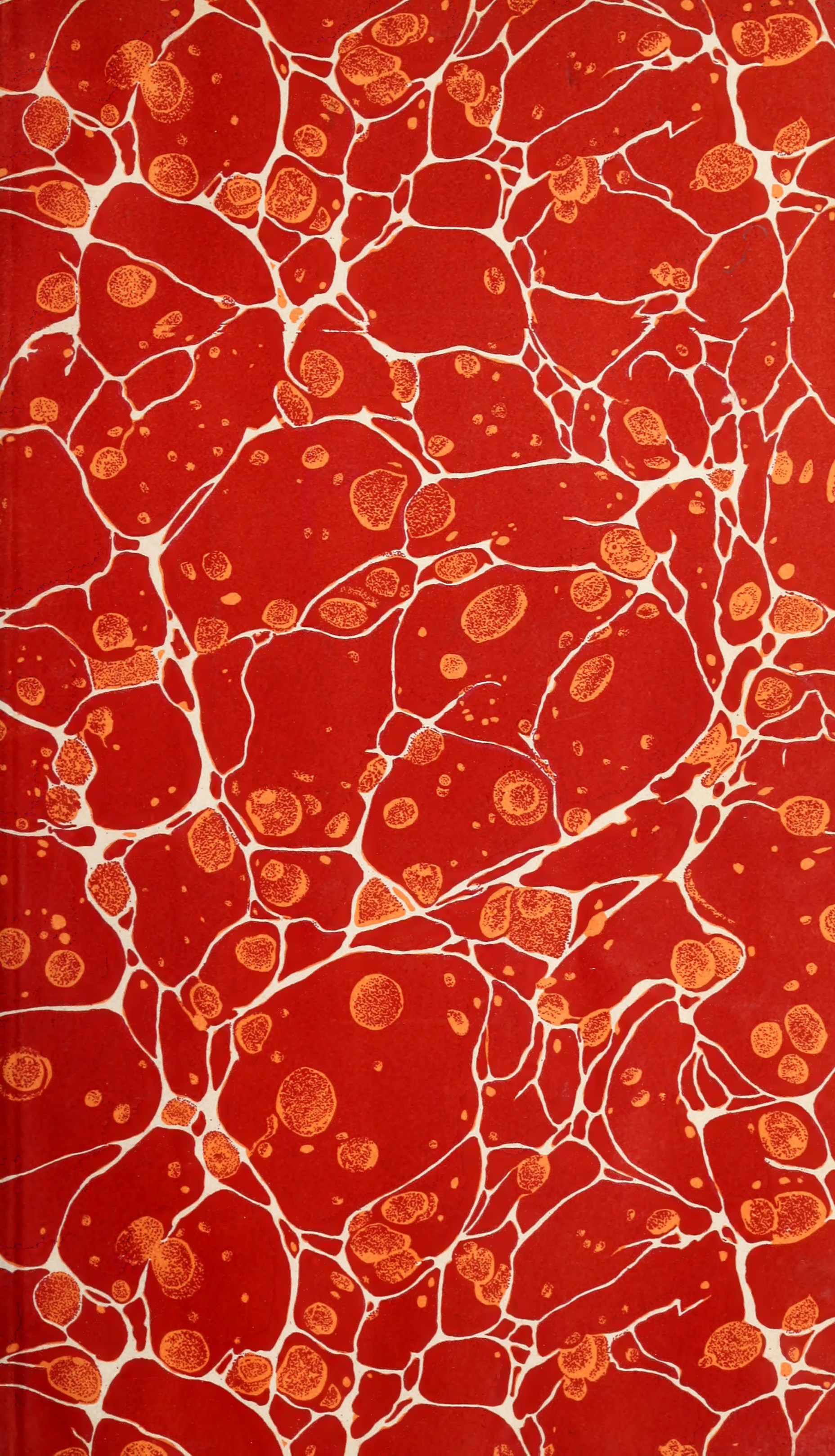

While the seed of Huron timothy is [illegible] as that of ordinary timothy, there are a few special precautions that should be taken to [illegible] the seed of ordinary varieties. If the seeding of Huron timothy follows closely that of some other grade of [illegible] the drill [illegible] at least two or three swaths should be mowed [illegible] around the outside of the field. When the seed is threshed, the machine should first be thoroughly cleaned, so that no seed of ordinary timothy will become mixed with the seed of the Huron variety.

The farmer who purchases timothy seed should obtain evidence that it is relatively free from weed seeds, particularly those of noxious weeds.

Recommendations

Huron timothy, like many varieties of other farm crops, is probably adapted to some conditions, yet cannot be expected [illegible] under other conditions.

Experimental records and practical tests in farms indicate that this variety is well adapted in northeastern California and in eastern Oregon and Washington. It also grows well in some localities in the northern part of the area between the Cascade and Rocky Mountains, on irrigated land or on land where there is a sufficient natural supply of moisture. Experience with Huron timothy in the Pacific Northwest indicates that it is suited there, not only for hay production, but also for pasture and range pastures, where the soil is adapted for the growing of timothy. There may be other areas in the northern part of the United States where conditions are favorable for the growth of this variety.

Because of its rather limited adaptation, it does not seem advisable to introduce Huron timothy into Iowa, Minnesota, Wisconsin, or other parts of the Central West where timothy seed is produced on a large scale for distribution to different parts of the United States. Other strains of timothy that have been selected more recently show indications that they may grow well where Huron is evidently not well adapted. From one or more of these other selections varieties will probably be developed that may have a wider range of adaptation than Huron.

The production of Huron timothy seed should probably be restricted to those parts of the country where the variety has been found satisfactory for hay production.

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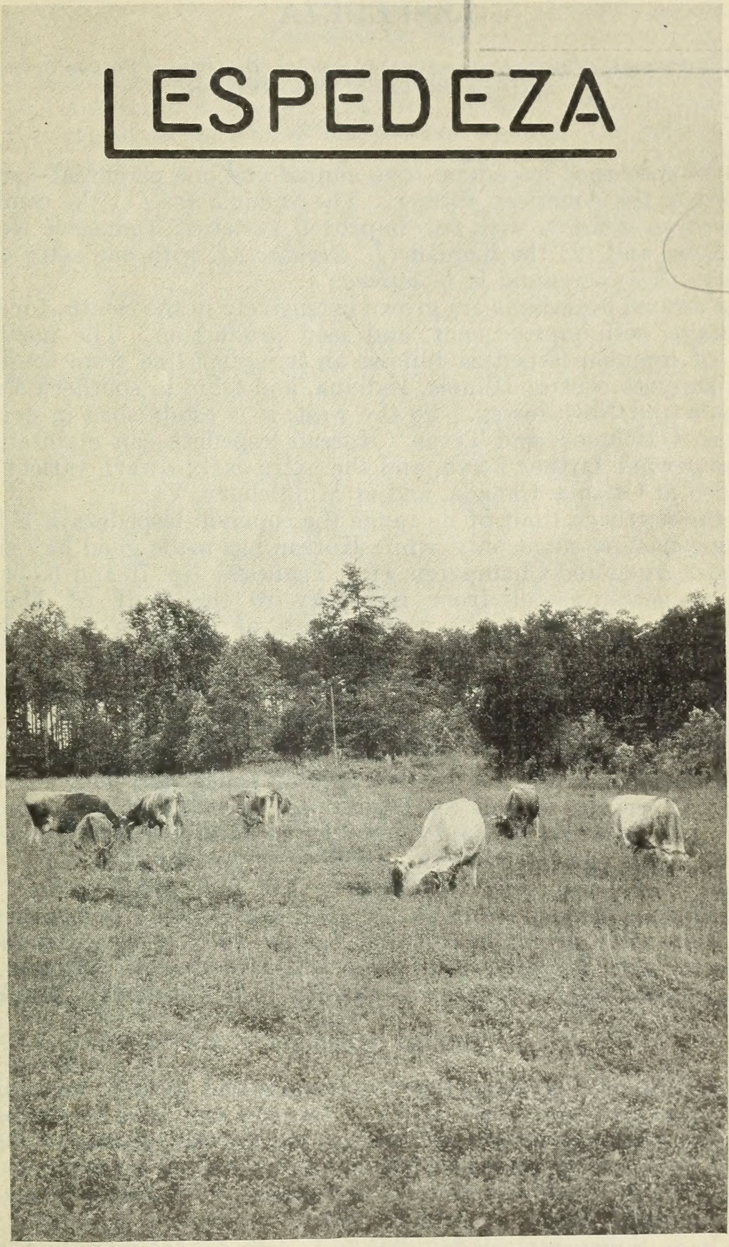
LESPEDEZA



LEAFLET NO. 100 U.S. DEPARTMENT OF AGRICULTURE

LESPEDEZA [1]

By A. J. Pieters, *principal agronomist in charge, Division of Forage Crops and Diseases, Bureau of Plant Industry*

Three species of lespedeza—two annual and one perennial—are of interest to the American farmer. The annuals are (1) the common (*Lespedeza striata*), with two improved varieties, Tennessee No. 76 and Kobe, and (2) the Korean (*L. stipulacea*), with one extra-early variety. The perennial is *L. sericea.*

The annual lespedezas are grown extensively in the South, for hay, pasturage, soil improvement, and seed production. The northern limit of common lespedeza follows an irregular line from southern Iowa through central Illinois, Indiana, and Ohio to southern Pennsylvania and New Jersey. To the west, it is established in eastern Kansas, Oklahoma, and Texas. Korean lespedeza can maintain itself somewhat farther north, and the extra-early dwarf variety has reseeded at Ottawa, Canada, and at Middlebury, Vt.

In the northern limit of its range the common lespedeza is a low-growing pasture plant only, while Korean has made good hay crops at Attica, Ind., and Champaign, Ill. Tennessee No. 76 and Kobe are later varieties, useful from Kentucky to the Gulf of Mexico. Korean is too early to be useful south of northern Mississippi, Alabama, and Georgia.

Culture

The culture of lespedeza is simple. The seed is best sown on winter grain about the middle of March in the latitude of North Carolina and Tennessee, somewhat earlier farther south and later farther north. If seeding is done too late for the freezing and thawing of the ground to work the seed under the surface, the field should be lightly harrowed after seeding. If 25 to 30 pounds of seed per acre is used a hay crop may be expected that fall, provided soil and moisture conditions are suitable, or good grazing may be had beginning soon after grain harvest and lasting until frost. The secret of success with lespedeza is to get a full stand early. With a full stand, adverse conditions are less harmful than with a thin stand.

Soil and Fertilizers

Lespedezas will grow on poor, worn soils and on soils too sour to grow clover without the use of lime. On very sour land lime is beneficial, but except on such soils lime has not proved necessary. Phosphates have caused increased yields and should be used unless the soil is good, in which case they are not necessary. Moisture is usually the controlling factor in growth. While lespedezas, especially Korean, have shown remarkable ability to live on heavy soils during periods of severe drought, not much growth is made. For a growth tall enough to cut for hay, moisture is essential. On dry sandy soils lespedeza may survive, but the growth is insignificant.

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[1] This leaflet supersedes Farmers' Bulletin 1143, Lespedeza as a Forage Crop.

Lespedeza for Hay

The best crops of hay are secured on moist bottom lands. On such soils the difference in growth and yield between common lespedeza and the improved varieties is less than on upland. On bottom land from 2 to 4 tons of hay to the acre may be expected. On good upland the improved sorts will outyield common lespedeza. It is generally believed that with a good stand 4 inches of lespedeza above the cutter bar will yield 1 ton of hay per acre. The Kentucky Agricultural Experiment Station says of Korean that when a good stand is 8 to 9 inches high a ton of hay may be expected; when 12 to 14 inches, 2 tons, and when more than 24 inches, 4 tons of hay may be expected. At any rate, the yields of hay are surprisingly heavy.

When cut early, that is, before bloom but when tall enough to make a ton of hay per acre, and if not cut too short, say 3 to 4 inches from the ground, lespedeza may be expected to make new growth and to make a good seed crop in addition to the hay. The best hay is made when the lespedeza is not more than 15 inches high. When taller, it is more stemmy, with a smaller proportion of leaves.

To make the best hay lespedeza should be cut when in full bloom or shortly after. When it is left until a considerable part of the seed is ripe the resulting hay is of poorer grade. Lespedeza contains less moisture than alfalfa or red clover, is consequently more quickly cured, and the field-cured hay contains somewhat more dry matter than similarly cured alfalfa or clover hay.

When the lespedeza is from 6 to 10 inches high cutting may be done in the morning; the hay should be windrowed soon after being cut, and in good weather it may be hauled to the barn the next day. When the lespedeza is more than 15 inches high it should lie in the windrow 2 or 3 days.

Most lespedeza hay is consumed at home or in the neighborhood where it is produced. No grades for lespedeza hay have been established, and there is no general market. Good lespedeza hay falls but little short of alfalfa in protein and is even superior in carbohydrate content. Korean lespedeza hay has been used in Missouri to prepare fat cattle for a stock show and has given good results.

In the South, mixed lespedeza and Bermuda-grass hay is often cut, and lespedeza combines well with orchard grass and redtop, the first or June cutting being nearly pure grass hay, the second pure lespedeza.

Lespedeza for Pasturage

Lespedeza is more widely used for pasturage than for hay. Throughout the Southeast as far north as the Ohio River and west to northern Missouri and eastern Kansas, lespedeza of one variety or another is or should be an ingredient of every pasture mixture. It is also much used in a pure stand as a temporary or rotation pasture, but more especially in the region extending from Virginia and North Carolina west to eastern Kansas. This general region is also the one in which the improved varieties are most generally grown.

A rotation of small grain and lespedeza may be established and maintained for several years without plowing. This plan is especially successful with Korean lespedeza. After the seed is ripe the field is disked and winter grain seeded. After the harvesting of the grain the lespedeza may be grazed. In some cases this plan has resulted in increased yields of grain and reduced cost of production. From a combination of winter grain and lespedeza the farmer may obtain pasturage over a long period. The grain may be grazed from late winter to May, and with the possible exception of 2 weeks between grain and lespedeza, grazing may continue until frost. In the fall the lespedeza may be disked and grain again seeded. Korean lespedeza lends itself especially well to this system, as there is sure to be a heavy seed crop before it is necessary to seed the grain.

Lespedeza, being a hot-weather plant, makes an especially good pasture combination with such grasses as orchard grass and redtop. These make good grazing in the spring but are of little value in the summer, when the lespedeza is at its best. When cattle are grazed mostly on grass pasture it is advisable to have a reserve field of lespedeza upon which the cattle may be turned from July until frost. This will maintain gains or keep up and even increase the milk flow while resting the grass. This plan has been followed successfully by the Missouri Agricultural Experiment Station in connection with bluegrass pastures.

The front-page illustration shows cattle grazing on Korean lespedeza.

Lespedeza must not be expected to provide early grazing. In North Carolina and Kentucky June 1 to 15 is a fair date to expect early grazing from lespedeza. Korean grows more rapidly in the spring than the other lespedezas, but dies earlier, so that it is not so good for late grazing. In favorable locations or seasons grazing may begin May 15, but at higher elevations and north of the Ohio River little grazing may be expected until July. Where the different varieties produce good seed crops they cannot be killed out by overgrazing.

A good pasture of pure lespedeza may be expected to reproduce year after year as long as it is wanted. This is true also of a grass-lespedeza pasture, except that on good bluegrass land the grass will probably crowd the lespedeza out in the course of time.

The carrying capacity of a good stand of lespedeza may be roughly estimated at from 1 to 2 mature cows per acre from June 1 or July 1 to October 15 or frost, depending on the variety and location.

Soil Improvement

The fact that lespedezas will improve the soil on which they are grown, so that subsequent crops of small grain, corn, and cotton will be larger than before lespedeza was planted, is well established. The degree of this improvement as measured by increased yields will depend upon the way the lespedeza is handled and on soil and climatic conditions. When the lespedeza is cut for hay, increases of from 50 to 100 percent in the yields of corn and cotton have frequently been recorded in North Carolina and Tennessee. The best practice appears to be to grow lespedeza for 2 or 3 years, utilizing it for hay or pasture, and to follow with 1 or 2 years of seed crops.

When land has become so worn as not to be worth cultivating it is often "turned out." Lespedeza comes in, but it takes several years to cover such poor ground through natural spread. A better plan is to disk and level after the last crop of corn or cotton and seed down to lespedeza. Superphosphate or basic slag, 300 to 400 pounds per acre, will help the lespedeza materially, and the lespedeza can be used for hay or pasturage, or, if the farmer has no use for it, left on the ground to reseed and enrich the soil for a year or two.

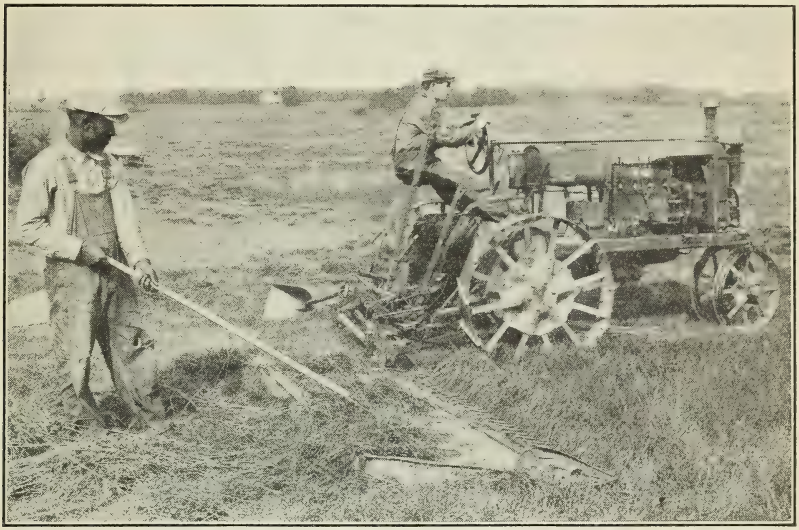

FIGURE 1.—Harvesting lespedeza seed with a pan.

Seed Production

The seed of common, Kobe, and Tennessee No. 76 lespedezas is harvested with a seed pan (fig. 1). This is a shallow metal pan bolted to the rear of the cutter bar. The back is 6 to 8 inches high, with sides sloping to the cutter bar. The hinged cover is made of metal perforated with holes just large enough for the lespedeza seed to fall through.

When the ripe lespedeza is cut, a man or a boy walking behind the pan rakes the material over the perforated cover, thus dislodging the ripe seed. Not all the seed is secured this way, but the best seed is pan-caught. For home use but a small acreage is required to supply the farmer's needs. Yields vary widely, but a good field of common or Tennessee No. 76 should yield 10 bushels of pan-caught seed per acre, and Kobe 10 to 12 bushels.

The seed of Korean lespedeza does not shatter so readily as that of common, and the use of a pan is profitable only when the seed is high in price or when the crop is overripe. Yields of Korean vary with stand and season. As much as 1,200 pounds per acre has been harvested, but 500 is a fair crop.

Commonly Korean lespedeza is cut with a mower, and not until the plants are brown. If the cutting is done too early much of the seed is immature. Cutting should be done when the plants are wet with dew, and windrowing in late afternoon when they again are somewhat damp. Threshing can be done with a grain separator.

Dodder

Dodder is the great weed pest of lespedeza, and where seed is produced it is important to remove the dodder from the field before it blooms, which may be done by cutting out the lespedeza on the infected spots, by burning, or by spraying with 3 percent sulphuric acid or with a commercial weed killer. When a field is badly infested a good plan is to graze it heavily so that the lespedeza is eaten down. Cattle eat the dodder readily, and after a field is heavily grazed the new growth will generally be free from dodder. If it is not, the remaining dodder should be cut out by hand or the field grazed the entire season.

Dodder seed cannot be completely separated from lespedeza seed, especially Korean, but much can be done by skillful and repeated cleaning.

Annual Varieties

Common, Kobe, and Tennessee No. 76 belong to the same species and are distinguished chiefly by size. Tennessee No. 76 has a more erect habit of growth than the other annual lespedezas, is late in maturing, but is a heavy yielder of excellent hay. Kobe plants are larger and coarser than those of the common lespedeza, the leaflets are broader and longer, and the seed is large and distinctive. Kobe matures usually a little earlier than Tennessee No. 76.

Korean lespedeza belongs to a different species and is a larger, coarser plant than any of the others, with broader leaflets. The seed is distinctive, and the seeding habits are markedly different from those of the other varieties. In Korean the seeds are borne in the axils of the leaves on the ends of the branches. At maturity the leaves turn forward, and the tips of the branches resemble small cones. Korean matures much earlier than the varieties mentioned above; in fact, its early maturity is a disadvantage in the South as it is an advantage in the North.

The extra early dwarf variety of Korean lespedeza resembles the standard in all characters but is lower growing and matures very much earlier. It may have some value as a late summer pasture plant in New England and other northern sections, but it should not be introduced where the standard Korean is grown. The seeds of the two varieties are exactly alike, and the presence of the early variety can serve only to reduce the value of the standard Korean.

Lespedeza Sericea

The perennial species, *Lespedeza sericea*, is so new in the United States that much is still to be learned about its use and value. Once established, it comes back year after year from the crown, as in alfalfa. Plants at the Arlington Experiment Farm, Rosslyn, Va., which have been cut for seed every year have reached an age of 10 years (fig. 2), but it is not known how long plants will live when cut for hay or grazed. This will doubtless depend on how often the crop is cut and how heavily it is grazed.

Lespedeza sericea seed as harvested is "hard", and scarified seed should always be used. For seeding in rows 3 feet apart, as is done for seed production, 2 pounds of seed per acre is enough. When drilled or broadcast on winter grain for the purpose of establishing a meadow or pasture, 15 to 25 pounds of scarified seed is recommended, the lesser quantity when seeded for pasture, the greater when seeded for hay. Seeding should be shallow, the seed being left on or barely under the ground.

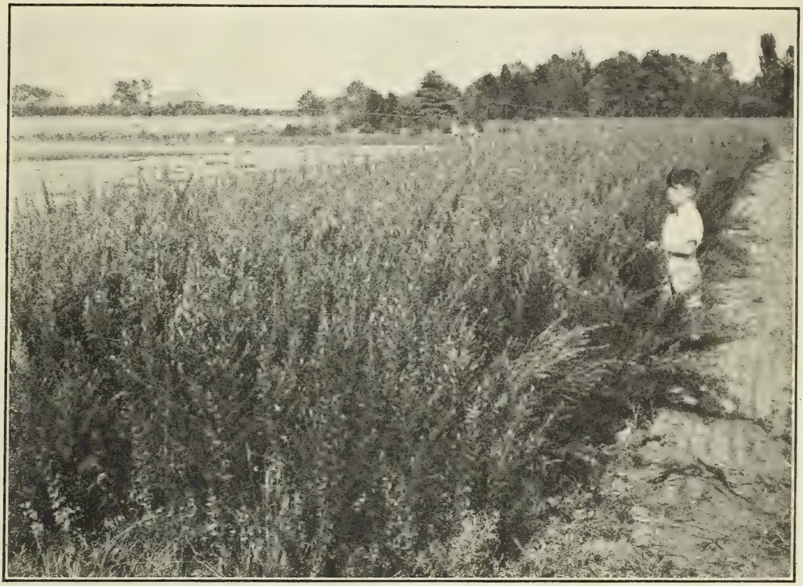

FIGURE 2.—*Lespedeza sericea* in broadcast stand at the Arlington Experiment Farm, Rosslyn, Va., 1932.

If a seed crop is wanted, the first-season cultivation should be the same as for corn or cotton. A broadcast or drilled seeding will not make a crop the same season except under unusually favorable conditions. The seedlings of *Lespedeza sericea* endure shading very well, and a broadcast seeding overrun with weeds should not be abandoned. The plants will probably come on strong the following spring.

Good hay may be made from *Lespedeza sericea*, but the first cutting must be made before the stems become woody. Probably a height of 15 inches is about right for the first cutting. The stubble should be left 4 or 5 inches high, as the new growth comes from the stubble and not from the crown as in alfalfa. The hay is extremely leafy, the first cutting being about 65 to 69 percent leaves, the second 69 to 71 percent. Chemical analysis shows the hay to have about the same composition as that of common lespedeza, but no comprehensive feeding trials have been made. It is known that cattle, sheep, horses, and mules eat the hay, but its relative feeding value as compared with alfalfa has not been determined.

Lespedeza sericea can be grazed. Sheep seem to be especially fond of it, so much so that probably it cannot be established under grazing by sheep. There has not been enough experience with the grazing of this plant to warrant a statement of the number of animals that may be carried per acre.

Lespedeza sericea is a heavy seeder. When planted in rows and cultivated, from 200 to 1,000 pounds of seed per acre have been harvested the first year. When the seed is ripe the plants may be cut with a mower, preferably one having a swathing attachment so that the cut plants are deposited out of the way of the teams on the next round. If they are trampled on, much seed will be lost. The material is readily cured and the seed easily threshed with a grain separator. After being threshed, the seed should be hulled and scarified. If a clover huller of the rasp type is available, this will thresh, hull, and scarify in one operation.

Being a perennial, *Lespedeza sericea* is limited in its range northward by the degree of cold it can endure. This is not yet known and may not be for several years. It has survived 2 years in southern Michigan, but the winters were relatively mild. It is quite certain that it will not produce a profitable or certain seed crop much north of the Ohio River. The plants blossom late, and a frost during the first half of October is quite likely to destroy or severely cut the seed crop. At Corvallis, Oreg., it has not seeded in 3 years.

When well established, this lespedeza will endure a great deal of drought, but possibly no more than sweetclover. In western Kansas it has not given promise of value in comparison with alfalfa or sweetclover.

From the limited information available, it appears that the greatest and most certain field of usefulness of this plant will be south of the Potomac and Ohio Rivers and west to eastern Kansas and Texas. How much farther it will be useful cannot be predicted at present.

Lespedeza sericea was distributed under three numbers, F.C. nos. 12087, 17291, and 04730. Of these, 12087 and 17291 are of identical origin, though some observers claim that the latter is somewhat finer stemmed. No. 04730 is a week or 10 days earlier in maturing seed and grows a few inches taller. The height varies so greatly with soil and moisture conditions, however, that it would be impossible to tell from any one field which variety is being grown. For hay or grazing all varieties probably have equal value, since the fineness of the hay depends on early cutting rather than on any supposed difference in the fineness of the stems.

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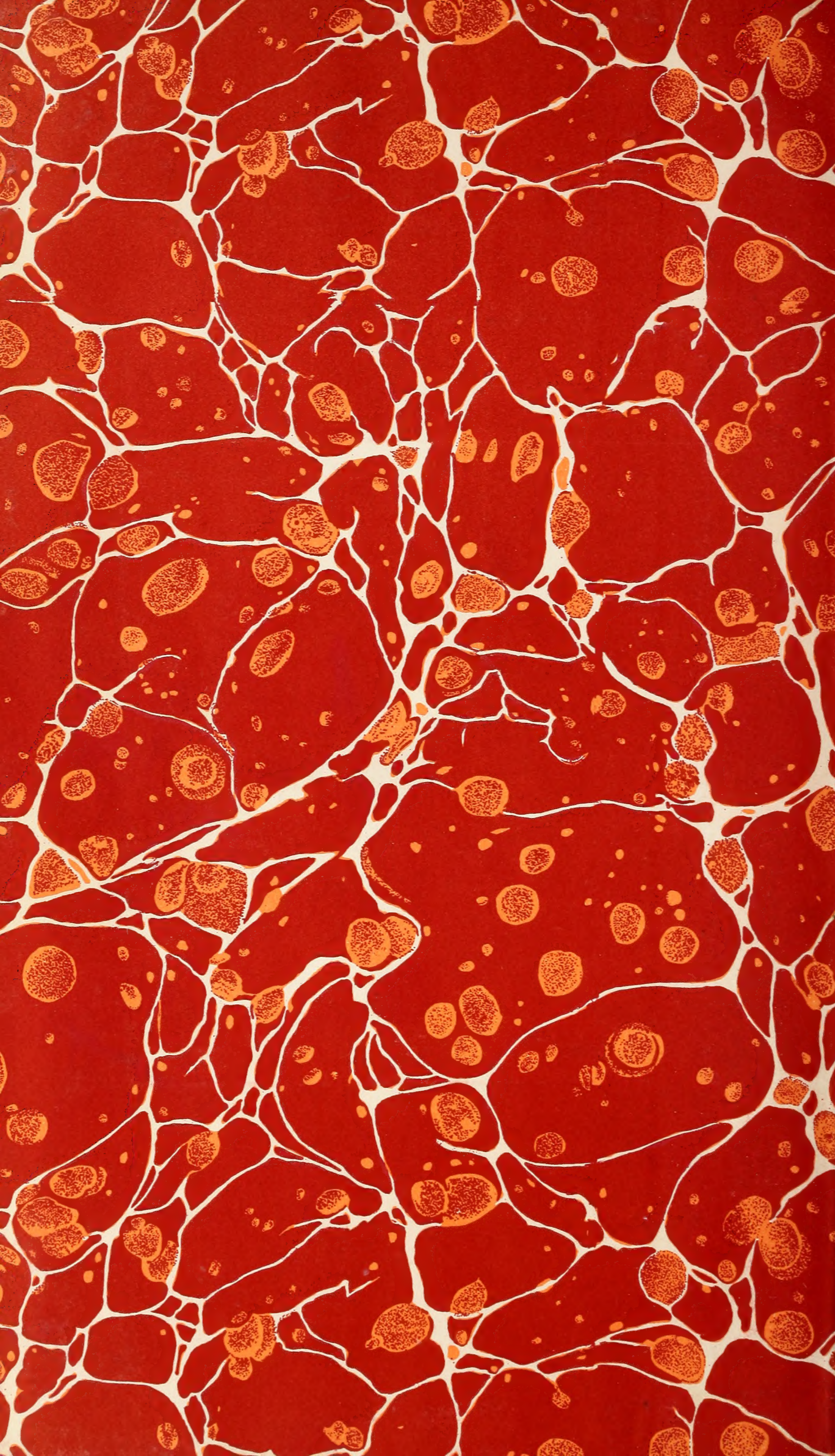

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